

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
15 March 2001 (15.03.2001)

PCT

(10) International Publication Number  
**WO 01/17543 A3**

- (51) International Patent Classification<sup>7</sup>: **A61K 38/17**, 39/395, A61P 19/00, 35/02, 35/04 // (A61K 38/17, 38:09) (A61K 39/395, 38:17)
- (21) International Application Number: PCT/US00/22806
- (22) International Filing Date: 18 August 2000 (18.08.2000)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
09/389,545 3 September 1999 (03.09.1999) US
- (71) Applicant: AMGEN INC. [US/US]; One Amgen Center Drive, Thousand Oaks, CA 91320-1799 (US).
- (72) Inventor: DUNSTAN, Colin, R.; 887 Tupelo Wood Court, Newbury Park, CA 91320 (US).
- (74) Agents: ODRE, Steven, M. et al.; Amgen Inc., One Amgen Center Drive, M/S 27-4-A, Thousand Oaks, CA 91320-1799 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:  
— with international search report
- (88) Date of publication of the international search report:  
26 July 2001
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*



**WO 01/17543 A3**

(54) Title: COMPOSITIONS AND METHODS FOR THE PREVENTION OR TREATMENT OF CANCER AND BONE LOSS ASSOCIATED WITH CANCER

(57) Abstract: The present invention relates to compositions and methods for the prevention and/or treatment of bone loss associated with cancer. More particularly, the invention relates to OPG compositions and methods for the prevention and/or treatment of bone loss comprising said compositions. The invention also relates to the use of OPG compositions for the treatment of multiple myeloma.

# INTERNATIONAL SEARCH REPORT

Int'l Application No  
PCT/US 00/22806

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61K38/17 A61K39/395 A61P19/00 A61P35/02 A61P35/04  
//(A61K38/17,38:09),(A61K39/395,38:17)

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61K C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS, WPI Data, MEDLINE

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	EP 0 784 093 A (AMGEN INC) 16 July 1997 (1997-07-16) abstract page 2, line 20 -page 3, line 6 page 7, line 24 - line 29 page 8, line 41 -page 9, line 10 page 12, line 17 - line 47 page 41, line 5 -page 42, line 5 page 45, line 30 -page 48, line 7 page 60, line 30 - line 41 --- -/--	1-15,21, 22 16-20

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*G\* document member of the same patent family

Date of the actual completion of the international search

22 February 2001

Date of mailing of the international search report

28/02/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl.  
Fax: (+31-70) 340-3016

Authorized officer

Noë, V

# INTERNATIONAL SEARCH REPORT

Int. .ional Application No  
PCT/US 00/22806

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	SIMONET W ET AL: "Osteoprotegerin: a novel secreted protein involved in the regulation of bone density" CELL,US,CELL PRESS, CAMBRIDGE, NA, no. 89, 18 April 1997 (1997-04-18), pages 309-319, XP002077048 ISSN: 0092-8674 abstract figure 5C page 314 -page 315, column 1, paragraph 1 page 315, column 2, last paragraph -page 316, column 1, paragraph 1 page 317, column 1, paragraph 2 ---	1-3, 5-10,13, 21
P,X	MORONY S ET AL: "A CHIMERIC FORM OF OSTEOPROTEGERIN INHIBITS HYPERCALCEMIA AND BONE RESORPTION INDUCED BY IL-1BETA, TNF-ALPHA, PTH, PTHRP, AND 1,25(OH)2D3" JOURNAL OF BONE AND MINERAL RESEARCH,NEW YORK, NY,US, vol. 14, no. 9, September 1999 (1999-09), pages 1478-1485, XP000971493 ISSN: 0884-0431 abstract page 1478, column 2, paragraph 1 page 1479, column 1, paragraph 1 page 1483, column 2, last paragraph ---	1-3, 5-10,13, 14,21
Y	US 5 843 901 A (ROESKE ROGER W) 1 December 1998 (1998-12-01) cited in the application column 1, line 64 -column 2, line 3 column 2, line 36 - line 40 column 10, line 56 -column 11, line 20 column 13, line 55 - line 60 column 17, line 15 - line 18 column 17, line 38 - line 42 ---	18-20
Y	PERIGAUD C ET AL: "NUCLEOSIDE ANALOGUES AS CHEMOTHERAPEUTIC AGENTS: A REVIEW" NUCLEOSIDES & NUCLEOTIDES,US,DEKKER, NEW YORK,NY,, vol. 11, no. 2/04, 1992, pages 903-945, XP000607988 ISSN: 0732-8311 page 907, last paragraph -page 909, paragraph 1 --- -/--	16

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 00/22806

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>X YANG ET AL: "Eradication of established tumors by a fully human monoclonal antibody to the epidermal growth factor receptor without concomitant chemotherapy" CANCER RESEARCH, AMERICAN ASSOCIATION FOR CANCER RESEARCH, BALTIMORE, MD, US, vol. 59, no. 5, 15 March 1999 (1999-03-15), pages 1236-1243, XP002156618 ISSN: 0008-5472 the whole document -----</p>	17

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/22806

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0784093 A	16-07-1997	AU 710587 B	23-09-1999
		AU 1468697 A	17-07-1997
		BG 101813 A	30-09-1998
		CA 2210467 A	03-07-1997
		CN 1182452 A	20-05-1998
		CZ 9702538 A	17-03-1999
		DE 19654610 A	26-06-1997
		EP 0870023 A	14-10-1998
		FR 2742767 A	27-06-1997
		GB 2312899 A, B	12-11-1997
		HU 9801122 A	28-08-1998
		JP 11503616 T	30-03-1999
		NO 973699 A	21-10-1997
		NZ 326579 A	28-01-1999
		PL 321938 A	05-01-1998
		SK 110797 A	12-07-1999
		TR 970550 A	21-07-1997
		WO 9723614 A	03-07-1997
		US 6015938 A	18-01-2000
US 5843901 A	01-12-1998	AU 715399 B	03-02-2000
		AU 6168096 A	30-12-1996
		CA 2219460 A	19-12-1996
		EP 0794961 A	17-09-1997
		JP 11507374 T	29-06-1999
		WO 9640757 A	19-12-1996